

## **SECTION 02221**

### **DEMOLITION**

#### **PART 1 - GENERAL**

##### **0.1 DESCRIPTION OF WORK**

- A.** Work Included: This Section specifies the following items:
1. Demolition, selective demolition and removal of structures and buildings.
  2. Demolition, selective demolition and removal of site improvements.
  3. Removing below-grade construction.
  4. Disconnecting, capping or sealing and removing site utilities.
  5. Salvaging items for reuse by the Authority.
- B.** Related Work: The following items are not included in this Section and will be performed under the designated Sections:
1. Division 15 Sections for demolishing or relocating site mechanical items.
  2. Division 16 Sections for demolishing or relocating site electrical items.

##### **0.2 DEFINITIONS**

- A.** Demolish: Completely remove and legally dispose of off-site.
- B.** Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Authority ready for reuse. Include fasteners or brackets needed for reattachment elsewhere.
- C.** Hazardous Material: include but is not limited to asbestos and materials regulated under TSCA, RCRA (310CMR 30.00) and the Massachusetts Contingency Plan (MCP) (310 CMR 40.00) and building construction material defined by OSHA. Where applicable, consideration should be given to MSDS in determining if a material could be potentially hazardous.

##### **0.3 MATERIALS OWNERSHIP**

- A.** Unless otherwise indicated, demolition waste becomes property of Contractor.
- B.** Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and

tablets, and other items of interest or value to Authority that may be uncovered during demolition remain the property of Authority.

1. Carefully salvage in a manner to prevent damage and promptly return to Authority.

#### **0.4 SUBMITTALS**

- A.** Proposed Protection Measures: Submit informational report in accordance with OSHA Part 1926 procedures, including drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection, for dust control and for noise control. Indicate proposed locations and construction of barriers.
  1. Adjacent Buildings and Structures: Detail special measures proposed to protect adjacent buildings and structures to remain.
- B.** Schedule of Building Demolition Activities: Indicate the following:
  1. Detailed sequence of demolition work, with starting and ending dates for each activity.
  2. Temporary interruption of utility services.
  3. Shutoff and capping or re-routing of utility services.
- C.** Building Demolition Plans: Drawings indicating the following:
  1. Locations of temporary protection and means of egress for adjacent occupied buildings.
- D.** Inventory: Submit a list of items to be removed and salvaged and deliver to Authority prior to start of demolition.
- E.** Predemolition Photographs or Video: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by building demolition operations. Comply with Division 1. Submit before the Work begins.
- F.** Hazardous material remediation plan. Included in the plan are landfill records indicating receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.
- G.** Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.
- H.** Results of Professional Engineer's survey required by Article 3.1D.

## **0.5 QUALITY ASSURANCE**

- A.** Regulatory Requirements: Comply with governing EPA notification regulations before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B.** Standards: Comply with ANSI A10.6 and NFPA 241.
- C.** Prepare a hazardous material remediation plan and submit to Authority for approval.
- D.** Predemolition Conference: Conduct conference at Project site to review methods and procedures related to building demolition including, but not limited to, the following:
  - 1. Review of hazardous material remediation plan.
  - 2. Inspect and discuss condition of construction to be demolished.
  - 3. Review structural load limitations of existing structures.
  - 4. Review and finalize building demolition schedule and verify availability of demolition personnel, equipment, and facilities needed to make progress and avoid delays.
  - 5. Review and finalize protection requirements.
  - 6. Review procedures for noise control and dust control.
  - 7. Review procedures for protection of adjacent buildings.
  - 8. Review items to be salvaged and returned to Authority.

## **0.6 PROJECT CONDITIONS**

- A.** Buildings to be demolished will be vacated and their use discontinued before start of the Work.
- B.** Buildings immediately adjacent to demolition area may be occupied. Conduct building demolition so operations of occupied buildings will not be disrupted.
  - 1. Provide not less than 72 hours notice of activities that will affect operations of adjacent occupied buildings.
  - 2. Maintain access to existing walkways, exits, and other facilities used by occupants of adjacent buildings.
    - a. Do not close or obstruct walkways, exits, or other facilities used by occupants of adjacent buildings without written permission from authorities having jurisdiction.
- C.** The Authority assumes no responsibility for buildings and structures to be demolished.
  - 1. Conditions existing at time of inspection for bidding purpose will be maintained by Authority as far as practical.

- D. Hazardous Materials: Hazardous materials may be present in buildings and structures to be demolished. A report on the presence of hazardous materials is on file at the Authority for review and use. Examine report to become aware of locations where asbestos, lead paint or other hazardous materials are present. Do not disturb hazardous materials or items suspected of containing hazardous materials except under procedures specified or required by a licensed professional and/or agency having jurisdiction.
- E. On-site storage or sale of removed items or materials is not permitted.

## **0.7 COORDINATION**

- A. Arrange demolition schedule so as not to interfere with Authority's operations and operations of adjacent occupied buildings.

## **PART 2 - PRODUCTS (Not Used)**

## **PART 3 - EXECUTION**

### **0.1 EXAMINATION**

- A. Verify that utilities have been disconnected and capped before starting demolition operations.
- B. Review Project Record Documents of existing construction provided by Authority. Authority does not guarantee that existing conditions are same as those indicated in Project Record Documents.
- C. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.
- D. Engage a professional engineer to perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during building demolition operations.
- E. Verify that hazardous materials have been remediated before proceeding with building demolition operations.

### **0.2 PREPARATION**

- A. Existing Utilities: Locate, identify, disconnect, and seal or cap off indicated utilities serving buildings and structures to be demolished.

1. Arrange to shut off indicated utilities with utility companies.
  2. If removal, relocation, or abandonment of utility services will affect adjacent occupied buildings, then provide temporary utilities that bypass buildings and structures to be demolished and that maintain continuity of service to other buildings and structures.
  3. Cut off pipe or conduit a minimum of 24 inches below grade. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing according to requirements of authorities having jurisdiction.
- B. Existing Utilities:** Refer to Division 15 and 16 Sections for shutting off, disconnecting, removing, and sealing or capping utilities. Do not start demolition work until utility disconnecting and sealing have been completed and verified in writing.
- C. Temporary Shoring:** Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent unexpected movement or collapse of construction being demolished.
1. Strengthen or add new supports when required during progress of demolition.
- D. Salvaged Items:** Comply with the following:
1. Clean salvaged items of dirt and demolition debris.
  2. Pack or crate items after cleaning. Identify contents of containers.
  3. Store items in a secure area until delivery to Authority.
  4. Transport items to storage area designated by Authority.
  5. Protect items from damage during transport and storage.

### **0.3 PROTECTION**

- A. Existing Facilities:** Protect adjacent walkways, loading docks, building entries, and other building facilities during demolition operations. Maintain exits from existing buildings.
- B. Existing Utilities:** Maintain utility services to remain and protect from damage during demolition operations.
1. Do not interrupt existing utilities serving adjacent occupied or operating facilities unless authorized in writing by Authority and authorities having jurisdiction.
  2. Provide temporary services during interruptions to existing utilities, as acceptable to Authority and authorities having jurisdiction.
    - a. Provide at least 72 hours notice to occupants of affected buildings if shutdown of service is required during changeover.
- C. Temporary Protection:** Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities

having jurisdiction and as indicated. Comply with requirements in Division 1.

1. Protect adjacent buildings and facilities from damage due to demolition activities.
2. Protect existing site improvements, appurtenances, and landscaping to remain.
3. Erect a plainly visible fence around drip line of individual trees or around perimeter drip line of groups of trees to remain.
4. Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
5. Provide protection to ensure safe passage of people around building demolition area and to and from occupied portions of adjacent buildings and structures.
6. Protect walls, windows, roofs, and other adjacent exterior construction that are to remain and that are exposed to building demolition operations.
7. Erect and maintain dustproof partitions and temporary enclosures to limit dust, noise, and dirt migration to occupied portions of adjacent buildings.

- D.** Remove temporary barriers and protections where hazards no longer exist. Where open excavations or other hazardous conditions remain, leave temporary barriers and protections in place.

#### **0.4 DEMOLITION, GENERAL**

- A.** General: Demolish indicated existing buildings and site improvements completely. Use methods required to complete the Work within limitations of governing regulations and as follows:
1. Do not use cutting torches until work area is cleared of flammable materials. Maintain portable fire-suppression devices during flame-cutting operations.
  2. Maintain fire watch during and for at least four hours after flame cutting operations.
  3. Maintain adequate ventilation when using cutting torches.
  4. Locate building demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
  5. In general, demolish buildings top down.
- B.** Engineering Surveys: During demolition, perform surveys to detect hazards that may result from building demolition activities.
- C.** Site Access and Temporary Controls: Conduct building demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Authority and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.
2. Use water mist and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations. Do not use water when it may damage adjacent construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.

**D.** Explosives: Use of explosives is not permitted.

## **0.5 DEMOLITION BY MECHANICAL MEANS**

- A.** Proceed with demolition of structural framing members systematically, from higher to lower level. Complete building demolition operations above each floor or tier before disturbing supporting members on the next lower level.
- B.** Remove debris from elevated portions of the building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
1. Remove structural framing members and lower to ground by method suitable to minimize ground impact and dust generation.
- C.** Salvage: Items to be salvaged are indicated on Drawings.
- D.** Below-Grade Construction: Demolish foundation walls and other below-grade construction that are within footprint of new construction and extending 5 feet outside footprint indicated for new construction. Abandon below-grade construction outside this area.
1. Remove below-grade construction, including basements, foundation walls, and footings, to at least depths indicated.
- E.** Existing Utilities: Abandon existing utilities and below-grade utility structures. Cut utilities flush with grade unless indicated otherwise.

## **0.6 SITE RESTORATION**

- A.** Below-Grade Areas: Rough grade below-grade areas ready for further excavation or new construction.
- B.** Site Grading: Uniformly rough grade area of demolished construction to a smooth surface, free from irregular surface changes. Provide a smooth transition between adjacent existing grades and new grades.

## **0.7 REPAIRS**

- A.** Promptly repair damage to adjacent buildings, utilities, fences, or other structures caused by demolition operations.

## **0.8 DISPOSAL OF DEMOLISHED MATERIALS**

- A.** Remove demolition waste materials from Project site and legally dispose of them in an EPA-approved landfill acceptable to authorities having jurisdiction.
  - 1. Do not allow demolished materials to accumulate on-site.
  - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B.** Do not burn demolished materials.

## **0.9 CLEANING**

- A.** Clean adjacent structures and improvements of dust, dirt, and debris caused by building demolition operations. Return adjacent areas to condition existing before building demolition operations began.

# **PART 4 - MEASUREMENT AND PAYMENT**

## **0.1 MEASUREMENT**

- A.** No separate measurement will be made for demolition but all costs in connection therewith shall be included in the Lump Sum price for demolition except as otherwise noted. All preparation and incidental work necessary to accomplish the removals will be considered incidental to the Lump Sum price.

## **0.2 PAYMENT**

- A.** Payment for demolition will be made at the Contract lump sum prices for the quantities determined as specified above.



**0.3 PAYMENT ITEMS**

ITEM NO.	DESCRIPTION	UNIT
0211.000	DEMOLITION	LS

**END OF SECTION**

## **NOTES TO THE DESIGNER**

- A.** Any request to modify or waive the specification requirements listed below must be approved in writing by the MBTA's Director of Design:
1. Performance of an asbestos, lead paint and hazardous material survey by the Consultant.
  2. Preparation of remediation requirements.